S P E C I F I C A T I O N

TITLE OF THE INVENTION

METHOD FOR USER-RELATED BILLING FOR TRANSMITTED-
TELEVISION, VIDEO, RADIO OR GAMES PROGRAMS IN A RESTRICTED-
5   ACCESS SYSTEM, AND A SYSTEM FOR CARRYING OUT THE METHOD

BACKGROUND OF THE INVENTION

Pay TV is known as a form of television which transmits pay television programs as requested by a user, at a time predetermined by the user, via a specific television channel and in a specific sequence. One subgroup of pay TV is what is

10   referred to as pay-per-view, in which the user pays only for those television programs which he/she also actually sees. This means that billing is based, for example, on minutes, quarter-hour periods in which viewing occurs, or transmissions of the television program that are viewed. Thus, in contrast to classical pay TV, in which a fixed monthly amount is paid for a specific channel,

15   the pay-per-view system requires that payment be made only for the television programs which the user actually watches in a specific time.

It is furthermore known for conditional access systems to be used in pay TV systems, in order to ensure that pay TV programs (television programs) can be received only by the users who are authorized to do so. This is done by encrypting

20   the program contents by storing receiving rights in a security module in a control device in a terminal which is connected between the actual television set and an antenna device for receiving the program contents, and by adding reception conditions for the actual program content.

Such terminal control devices for controlling reception of television

25   programs are generally set-top boxes or decoders. However, other terminals are also possible; for example, PC cards or PC-MCIA modules. The terminal with a control device also can be integrated in a television. Such terminal control devices carry out functions such as decompression, decoding, digital/analog conversion, reception, enabling and billing for the program contents. In order to encrypt such program

30   contents and to handle associated billing, the user normally buys a smart card, and

pushes it into the terminal control device in order to use it. Such a smart card enables a television channel which contains the desired television program, once a specific amount has been paid by the user. Since such smart cards can be used interchangeably in a terminal control device, it is possible to transfer the smart card

5   to someone else. Billing for television program contents can, thus, be transferred to another user, by transferring the smart card once it has been enabled. The billing of program contents to an individual person, therefore, is not essential.

In the case of a "virtual card," the data are managed and maintained centrally by a server. There are no card readers or similar hardware in the set-top box.

10   Since payments for prepaid TV systems are based on time units which pass while watching television programs, it is desirable that the billing for television program contents which are watched be carried out flexibly and quickly in order to avoid interrupting a film if the prepaid time interval is shorter than the total time of the film. This risk occurs, in particular, when a previously enabled smart card has a

15   fixed associated amount which does not correspond to the total amount required for the entire film. In this case, it would first of all be necessary to find an institution to re-enable the smart card in order to be able to watch the desired film all the way through.

The present invention is, therefore, directed toward providing a method for

20   user-related billing for transmitted television programs in a restricted-access system, and a restricted-access system for carrying out this method, which allows user-related, flexible and fast billing for pay television programs, together with fast user-friendly user identification for the permitted access to specific television programs.

25   SUMMARY OF THE INVENTION

A major aspect of the present invention is that a virtual card is used in the terminal control device, rather than a previously used smart card, in order to control and to allow fast, uncomplicated, user-specific billing for the television programs to be transmitted and for user-specific access to the television programs. By using

30   such a virtual card, when the terminal control device is first switched on, a

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telecommunications connection is set up to a central service provider, also referred to as a server, and the number and authorization levels of the required usage identifications are automatically checked by the user. The user then uses a normal bank connection or states his/her credit card number to transfer a specific amount of money, which is assigned to his/her usage identification, and which is then reduced by the service provider on the basis of the selected television programs by a charge corresponding to the selected television program (individual program, specialist-services channels, monthly fee, etc.; i.e., pay-per-view. The service provider debits an amount of money only once a step of comparison of the usage identification data entered by the user with usage identification data stored in the service provider indicates that an authorized user is accessing the restricted-access system.

In addition, such debiting also takes place only when the specific user has sufficient credit in his/her own credit account to cover the amount of money appropriate for the desired television program; that is, the amount of money is sufficient for the desired television program. The user can thus receive a television program which he/she would like to watch only if the user has previously deposited in the credit account allocated to the user a sufficient amount of money for the television program he/she wishes to watch, and the user identifies himself/herself as the authorized user via the usage identification to be entered. User-related flexible billing for the transmitted television program is thus possible.

A step of checking whether or not the credit account has sufficient credit for the desired television program makes it possible to use the control device to indicate to the user that he/she will first of all have to transfer a larger amount of money to his/her credit account before reception of the desired television program is possible. If the user now uses, for example, online banking to rapidly transfer this amount of money to the credit account assigned to him/her, then it is possible for the user to have rapid access to a television program that he/she would like to watch in a simple manner, and, in consequence, rapid billing for the television program to be transmitted is possible.

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In addition, the service provider checks whether access to the desired television program for the user with that specific usage identification is possible at all. If this is not the case, for example in the case of films which must not be watched by users younger than 18 years old, then a decoding key for usage

5   identification and the desired television program is not allocated, and the program provider does not transmit this decoding key to the control device. It is thus possible to prevent or allow access to specific television programs on a user-related basis.

According to one embodiment of the present invention, the credit account

10   can be subdivided into various credit sub-accounts, in order in this way to allow access to the prepaid TV system on a personal basis for an entire family. Shopping credit accounts also can be set up.

It is also feasible to enter the identification number for an item from a transmitted shopping program, rather than a desired television, video, radio or

15   games program. In this case, the various steps of checking, for example that there is sufficient credit in the credit account or comparison of the entered and stored usage identification data, are carried out in the same way in order then to send to the user an item which has been seen and ordered in the shopping program, rather than sending a desired television program to the user. To do this, it is also necessary to

20   state a postal address for delivery of the item to the user. This likewise can be done during the initialization of the account.

The system according to the present invention advantageously has devices for storing a user profile, which includes the usage identification data, and for storing a television program and television channel program, which includes the

25   available television programs, and a comparison device for comparing usage identification data stored and entered by the user, as well as television program data stored and entered by the user. This allows user-related allocation of a specific key for decoding the desired television programs to be transmitted. Other users, therefore, cannot access a specific range of television programs, which is available

30   only to this user.

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Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

5   Figure 1 shows a schematic illustration of one embodiment of the restricted-access system of the present invention with user-related billing for transmitted shopping programs.

        Figure 2a shows a first part of a flowchart for one embodiment of the method according to the present invention.

10   Figure 2b shows a second part of a flowchart for the one embodiment of the method according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

        Figure 1 shows one embodiment of the restricted-access system of the present invention with user-related billing for transmitted television programs. In

15 this case, the system includes a service provider 1 and a control device 6 (set-top box) arranged at the receiving end, and a television set 7 arranged at the receiving end. The control device 6 is connected between the television set 7 and an antenna device (which is not shown in this illustration) for receiving coded television programs, films and/or shopping programs.

20   The service provider 1 contains a memory device 2, which contains a user-specific profile which represents the usage identification data. These usage identification data are compared in a comparison device 4 with the entered usage identification data, such as the data entered by the user via the control device 6, in order to check that these data items are or are not identical. If the compared usage

25 identification data items are identical, a specific amount of money is then debited from a credit account 5, corresponding to a television program which the user wishes to watch and which he/she previously has entered in the control device 6.

        A memory device 3 contains a television program and a television channel profile which, inter alia, reflects the available television programs. If the desired

30 television program entered by the user matches a television program contained in

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the memory device 3, the appropriate amount of money is debited from the account 5, provided the usage identification data are identical.

Once the amount of money has been debited successfully from the credit account 5, a decoding key is allocated to the usage identification data and to the desired television program, which is then transmitted to the control device 6, where the coded television program to be transmitted can be decoded.

Before any comparison of the usage identification data and of the television program data and debiting of amounts of money take place, the user is requested via the control device 6 to enter an amount of money in his/her credit account. This is done using an entirely normal bank connection, which is connected to the account 5. Alternatively, a credit card number can be stated, so that the service provider 1 can debit the user's credit card account rather than debiting the account 5.

One embodiment of the method according to the present invention for user-related billing for transmitted television programs in a restricted-access system will now be explained in more detail with reference to Figures 2a and 2b. When a user obtains a terminal control device (set-top box) in order to allow reception of pay television programs, he/she is also given a virtual card. This virtual card has a printed ID and access PIN so that, once a connection has been set up to the service provider, the appropriate account/profile is actuated via inputs on, for example, the remote control/keys on the set-top box (step 10). At the same time, the control device 6 carries out a check of which details are required from the usage identification. This relates in particular to details about the number and authorization levels for user identification (step 11). In a step 12, the service provider 1 receives the check relating to the details about the usage identification and, via the control device 6, sends the user the relevant details (in steps 13 and 14) about the usage identification and about the user's bank connection data to be stated.

Then, in a step 15, the user transfers a predetermined amount of money, the amount of which should correspond at least to the amount of money required for the television program which he/she would like to watch, via a normal bank connection to a credit account which is allocated to the user's usage identification.

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The user then enters the usage identification data and information about the desired television program into the control device, in a step 16. This input and the previously carried-out check of the usage identification data and of the information about the desired television program are carried out, for example, using a remote

5   control and software which is arranged locally in the control device 6. The usage identification data includes a user identifier (user ID) and a personal identification number (PIN).

The software which is arranged locally in the control device now once again sets up a connection to the service provider (step 17) which then compares the

10   entered usage identification data with the usage identification data stored in the memory device 2 to see if they are identical (steps 18 and 19). As soon as it is found that the user identification data items are identical, a check is carried out in a step 20 to determine whether the user has the stated usage identification data for access to the desired television program. If this is not the case, for example because he/she

15   is not yet 18 years old, then the process passes back to a loop to the step 13 in the same way as if the check of the usage identification data found that the data items were not identical. The service provider then once again sends the check responses to the control device, in order to inform the user of the details of the usage identification and user's bank connection data which are required.

20   As soon as access to the desired television program is affirmed in step 20, a check is carried out in step 21 to determine whether or not the existing credit account has sufficient credit for the desired television program. If the amount of credit in the credit account is not sufficient for the desired television program, the control device is used, in step 22, to indicate to the user that he/she must first of all

25   ensure that there is sufficient credit in the account by once again transferring an amount of money to the associated credit account, as is carried out in step 15.

If the credit account has sufficient credit, the service provider automatically debits an amount of money associated with that television program from the credit account, in step 23. The specific decoding key is then allocated to the usage

30   identification and to the desired television program in step 24, and is sent to the

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control device, which receives the required decoding key in step 25, so that the user then uses this key to decode a coded television channel with the desired television program and thus makes it possible to access the pay television program (step 26). This enabling process results in the desired television program being received in the television set 7.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

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